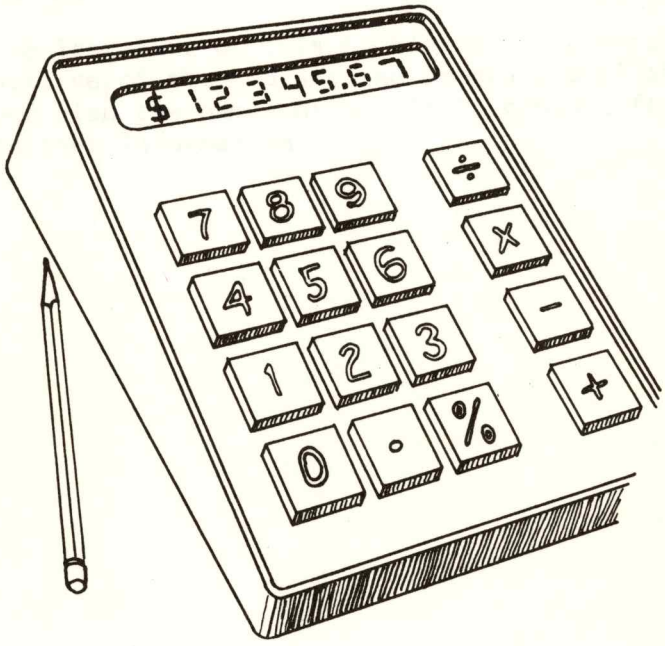
CONCORDIA UNIVERSITY

DUPLICATE

COMMERCE AND ADMINISTRATION
QUANTITATIVE METHODS

GUIDANCE INFORMATION CENTRE (SGW
OFFICE OF GUIDANCE SERVICES
CONCORDIA UNIVERSITY



1979-80

WHAT IS "QUANTITATIVE METHODS" ?

The first part of this booklet describes the field of study known as Quantitative Methods (often called "Q.M." for short)

DO EMPLOYERS WANT Q M GRADUATES ?

In the second section, we give the results of a questionnaire we sent out to some of the top companies in Canada

WHAT DOES A Q M GRADUATE DO ?

We give profiles of some previous graduates and what they are doing now, to give you an idea of the possibilities for a Q M Major student

WHAT IS THE Q M MAJOR PROGRAM AT CONCORDIA ?

The last part of this booklet gives a brief outline of the courses and programs available, and also the names of people to contact for further information

INTRODUCTION

In 1978 we in the Q M Society conducted a survey among our fellow Commerce students, in which we found that very few of them chose Q M Major or Minor programmes. Some of them had misconceptions about Q M , but many avoided it merely because they did not know much about it.

Some other results of our survey were :

Students do not consider Q M courses much harder than other Commerce courses in general.

What they learned in QM courses could be applied in many other courses taken later.

With this booklet we hope to clear up some misconceptions and lack of knowledge, and to interest more students in pursuing Majors and Minors in this field.

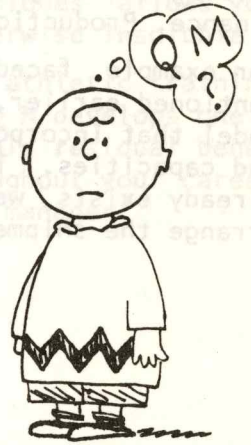
Q M IS . .

PLANNING

Business firms are continually faced with a variety of decision problems. Uninterrupted functioning of the firm depends on the ability of the company to resolve these problems. For example, take a company that supplies 100 warehouses across the country from 10 plants — it has to decide how much to ship from each plant to each warehouse in such a way that the warehouse requirements are met, the plant capacities are not exceeded, and at the same time to cut down the transportation costs as much as possible.

ANALYSIS

Take another simple decision problem. The company wants to embark on an expensive advertising program. To make sure that their money is well spent they want to find out all they can about their customers. They need procedures for collecting, summarizing and analyzing information about these people, so that they can design an appropriate plan of action.



These are just two examples of the hundreds of practical problems that arise every day. When you consider the immense complexity of today's business world, you can appreciate the intricacy of the problems which face managers. The more efficiently a firm faces the challenge of these problems, the more successful that company is going to be. The "seat-of-the-pants" approach to solving problems is obsolete ;

intricate questions have to be resolved systematically and scientifically. The methods for doing this are called "Quantitative Methods". They overlap to some degree, but the main ones are :

STATISTICS

— the methodology for collecting, testing, understanding and presenting facts and figures

MANAGEMENT SCIENCE (or OPERATIONS RESEARCH)

— the application of mathematical tools to the identification, formulation, solution and control of decision-making problems

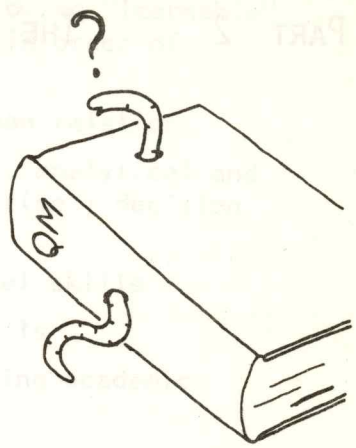
INFORMATION SYSTEMS

— the use of data processing facilities in the planning, operating, co-ordinating and control of a business.

All these methods build a model of the problem in precise terms, and use it to find the "best" possible course of action. They are applicable to problems arising in every functional area, e.g., Marketing, Finance, Production, Staffing.

For example, faced with the transportation problem we mentioned earlier, we can build a simple mathematical model that incorporates all the relevant cost items and capacities. Then, using a computer program which already exists, we can arrive at the cheapest way to arrange the shipments, in a matter of seconds.

Having explained what Q M is, it is fair to point out what it is not. Q M is *not* pure mathematics. The Q M student and the mathematician are separated by as wide a gulf as that between a civil engineer and a theoretical physicist. In Q M you do not have to prove mathematical techniques or develop new ones, but you must be able to *use* them to solve real-life problems. Mathematical results have to be exactly correct ; Q M results do not. Q M results have to be practical ; mathematical ones do not.



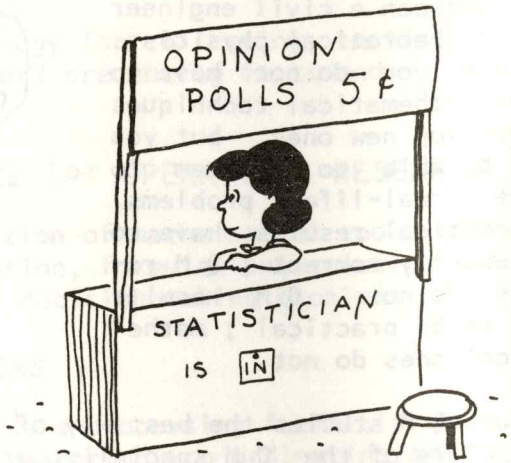
Because Q M studies the best way of getting a job done, the skills of the Q M specialist are in high demand in the modern organization. Furthermore, the value of other specialists (finance, accounting, etc.) will be increased as they learn more about Q M.

The benefits of studying Q M are actually two-fold :

FIRST, familiarity with specific techniques allows you to solve problems which are otherwise insoluble

SECOND, in much the same way that athletic training leads to good health, studying Q M develops one's analytical abilities. It is this residual benefit that stays with you throughout your career and helps make you an efficient manager.

PART 2 THE QUESTIONNAIRE



Before you choose Q M as your Major program you will want to know what the opportunities are for university graduates in this field. In search of significant answers to the questions that students commonly ask, we sent out a questionnaire to the top 300 companies across Canada. Most of the questions and answers would apply to all Commerce students, but in some the emphasis was placed upon the Q M area. Many of the responses we received are both surprising and reassuring.

The following are the results we obtained :

THE JOB INTERVIEW

The companies considered the following "learnable" qualities important when hiring (in order of preference) :

- Ability to communicate; human relations
- Logical deductive reasoning; analytical and problem-solving expertise ; decision making ability
- Leadership and inter-personal skills
- Organizing and Planning skills
- Technical knowledge (including academic standing)
- Social poise and personality
- Desire and ability to learn, grow and change within a company
- Business experience

Keep these in mind when going for an interview !

SUBJECTS OF STUDY

The same companies regarded certain specialties as more beneficial than others in helping to acquire the above-mentioned skills. In order of importance:

- Organizational Behaviour
- Management Science (Operations Research)
- Finance and Accountancy
- Marketing
- Human Relations and communications (Public Speaking)
- Mathematics, for Problem Solving
- Economics

Note that they want employees who are knowledgeable in *all* specialties, not just the one they are hiring for.

MAJORS AND MINORS

We asked the companies: when they were hiring for special positions, whether they considered it important for the applicant to have taken specialized training in that field.

Approximately 44 % said that advanced courses are a great asset, provided they are relevant to the particular job. For some jobs they are essential.

On the other hand 35 % said that on-the-job training was more important than university courses. The remaining 21 % said it all depended on the situation. Nobody said that extra courses are a waste of time.

Q M TECHNIQUES

Are Q M courses useful to students in other fields ?

Most companies see the student who has these skills as being an asset to the firm. "An appreciation of statistical methods and system analysis would likely prepare the students for problem-solving and decision-making roles in the organization, no matter what their specific fields." "Knowledge of computers, information systems — the whole area of quantitative analysis — will become increasingly critical over the next 10 to 15 years, particularly in the financial function. Commerce students who are not thoroughly grounded in these areas now run a high risk of becoming obsolete in mid-career." A large paint manufacturer said, "We would hope that in this day and age, no Commerce graduate would come to us without some peripheral knowledge of the Electronic Data Processing field in all of its aspects."

So if you want your degree to earn you a job with career prospects in *any* field, you should seriously consider taking a few Q M courses to improve your chances. A complete Q M Minor as part of your B.Comm. degree could be even more advantageous.

THE EMPLOYERS SAY . .

"Written and oral communication skills are two of the most important attributes a Commerce graduate can possess. Problem solving and analytical abilities are important, but unless the individual possesses strong inter-personal skills and is able to project, the message being conveyed may have little effect, or receive insufficient attention."
FOOD PRODUCT PACKAGING COMPANY

"The capability to logically think through a complex problem and arrive at a workable solution is considered extremely important to us when hiring. Frequently we look for students with strong mathematical and analytical skills and the ability to work effectively with others are also considered assets. To put it simply, any skills that lead to sound decision making are important." FINANCIAL INSTITUTION

"I suppose courses in organization behaviour, management science and possibly marketing might be helpful in developing these skills."
PACKAGING CONCERN

"All areas (subspecialties); the more developed the better. Having taken a Commerce degree myself, I found the real area lacking in the program was Public Speaking."
METAL COMPANY MANAGER

"On-the-job training plays a major role in the development of a new employee. Also, in evaluating applicants, additional courses do not normally indicate more in terms of the applicant's abilities."
FINANCIAL INSTITUTION

"Normally the good academic record . . supported by evidence of extra-curricular achievement on or off campus in areas of group activity or leadership, is sufficient to open the doors to initial and subsequent opportunities."
PAINT MANUFACTURER

"Education implies also people who are well read in other subjects, e.g., History, English, etc."
CLOTHES RETAILER

"The degree of specialization is less relevant than the personal characteristics which indicate probable success."
STEEL COMPANY

SECOND CHANCES

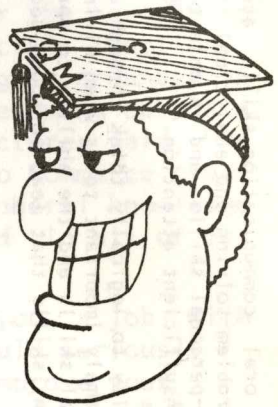
We have found that about half of our Commerce students are afraid that a Major in Q M will lessen their chance of getting a job in some other field. Is it true that a Q M training locks you in to a limited job market ?

Not so, say the leading Canadian companies. When asked whether a Q M Major graduate would be in an inferior position when applying for a job in, say, marketing, 49 % said No. 23 % said Maybe, depending on circumstances. The reasons were varied, but many felt that a Q M graduate in any department would be an asset to the growth and future of their companies. A large paint manufacturer said they would rather hire Q M graduates and train them in marketing, than hire marketing graduates without Q M knowledge, because of their better long-term potential.

When the same companies were asked whether a Q M graduate would have to remain always in a technically-oriented department, all replied negatively. They were all of the opinion that an individual's movement within the company's lines depended on personality, ambition, flexibility and other related qualities.

SALARIES

How do the starting salaries compare, for graduates with different Majors ?



98 % of our sources stated that *all* Majors receive the same starting salary. An oil company said, "No difference in starting salary ; however, the management science grad competes with the many computer science grads for systems jobs."

TOP JOBS

What type of training characterizes the background of the companies' present top managers ?

Over 60 % of the representatives stated that technical backgrounds, such as engineering and computer training were dominant. Some particular requirements were itemized, however, such as logical (but human-oriented, rather than mechanical) thinking; pragmatism coupled with motivational traits, and managerial skills.

As to the future, most felt that the background of a top manager would consist of a university education in commerce or technology. A major transportation company's representative stressed that technical knowledge and analytical skills were necessary when he stated, "Future managers will require knowledge of computers, human behaviour and sociology". Many of the firms placed growing importance on a strong mathematical and problem-solving background. The other answers depended more or less on the specific industry. A leading oil company felt that future managers would be technically oriented; a leading manufacturer was looking for EDP-trained people.

WRAP-UP

Companies are in need of people with analytical skills and problem-solving expertise ; you can develop these skills by studying Q M.

All Commerce students at Concordia are required to take four Q M courses ; but additional Q M elective courses would be an asset to you. The companies feel that all areas of Q M are of some importance. The extra knowledge of Quantitative Methods will give you an advantage in your studies, in getting a job, and all through your career.

PART 3 PROFILES

Because of the versatility of Q M , graduates may be employed in many different areas. A few short profiles illustrating the type of work involved, the nature of the position, and its financial rewards are given in this section. These men and women are employed in industry, government, private consulting, and university; but this by no means exhausts all the job opportunities available to Q M graduates.

The names used are fictitious.

Vito DeLuca

Age 22
Income $ 12,500

Present position: Market Research Analyst with a leading national lingerie manufacturer

When Vito received his Bachelor's degree from Concordia University in the spring of 1978, he started his present position as a market research analyst. His job encompasses many varied tasks, including analyzing styles for the market, forecasting market conditions and market characteristics, drawing up capital budgets and cost-benefit analyses, and working on different short-term projects in market research. In addition to being a market research analyst, Vito spends some of his time as a technical specialist, programming mini-computers within the firm. He qualified for this job because of his Q M education and his summer experience as a computer operator and data processing co-ordinator. Vito's educational background is a standard one in that he entered the Commerce programme at the CEGEP level immediately after High School, and then continued at the university level. He will soon begin studies leading to an M B A at Concordia, as he thinks this will aid him in his future.

Patrick Anderson

Age 25
Income $ 20,000

Present position: Technical Assistant in a municipal government office

Patrick took a Bachelor of Commerce degree from Loyola College, with a Major in Data Processing (now one of the Concordia Q M programmes). Because his B. Comm. provided him with complete training in all aspects of business as well as computer applications, an Alberta finance company offered him a junior position in its planning and control department. Here he became the department's expert in finding and interpreting the information they needed to make their decisions.

He left this position when the City of Edmonton offered him a better one, as part of the very active City Planning group. Here he works with experts in urban development, engineering and data processing, helping to provide the information and analysis needed by the municipality in coping with the city's rapid expansion. His opportunities for future advancement are unlimited.

Robert Leduc

Age 25
Income $ 21,000

Present position: Operations Research Analyst at the Naval Undersea and Development Centre

Robert received his Bachelor's degree in physics and mathematics from the University of Calgary. During the summer of his senior year he worked for the Research Centre as a summer employee. It was there that he acquired the interest in Operations Research (OR) which later led him to obtain a Master's degree in the field of O R.

After rejoining the Centre as a permanent employee, Robert has been working with operational testing of the use of lasers in the detection and classification of submarines. He is a member of a well-rounded team of specialists in O R, oceanography, statistics, mathematics, physics and economics.

Robert is now taking graduate evening courses in O R at one of the local universities, but has not yet made up his mind whether he would like to pursue a graduate program leading toward a Ph. D. degree. The Centre is paying his tuition and other educational expenses. He has received several excellent job offers since he has been at the Ventre, but he has turned them down. He is satisfied with the challenge and reward of his present position.

Rachel Bernstein

Age 28
Income $ 20,000

Present position: Operations Research Analyst with an international O.R. and Management Science consulting firm

Rachel did her undergraduate work in economics and then went to work for her firm as an Operations Research Analyst trainee. During the early years of her employment, she earned a Master's degree in O R by attending evening classes at a nearby university. Her expenses and tuition were paid by the firm.

Her work at the firm has involved a wide range of stimulating O R projects. Recently, Rachel had the opportunity to spend some time in Africa while working on a company contract. The purpose of the project was to find optimum methods of developing the economic and industrial resources of the country.

Rachel's latest project was to find ways to optimize the operations of a large city hospital. The problems included manpower allocation requirements, patient scheduling, and inventory control of the medical supplies. From her study the hospital was able to significantly increase its efficiency, resulting in benefits to both patients and doctors. Through these and other projects Rachel has found a great amount of personal satisfaction in the diverse and challenging projects of an O R Analyst.

Ronald Speck

Age 35
Income $ 32,000

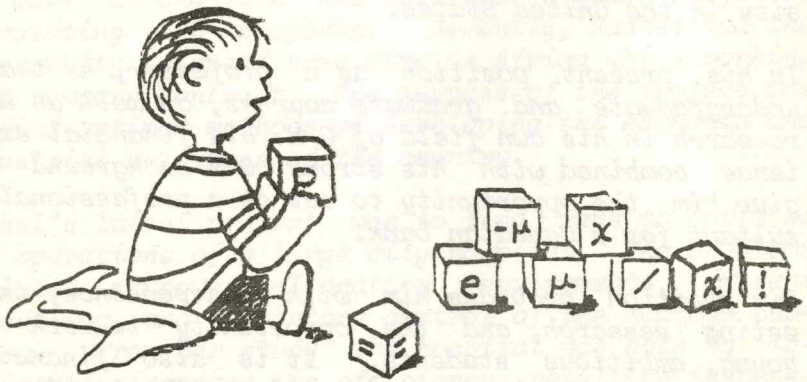
Present position: Associate Professor of Quantitative Methods at a Canadian university

After obtaining his M B A at Sir George Williams University (now Concordia), Ronald went to work in the finance department of a large industrial firm. It was there that he realized how applicable the Q M he had studied at university really was in actual business situations. He also developed an interest in further study in the subject, and went on to obtain a Ph. D. degree in Management Science from a well-known university in the United States.

In his present position as a professor, he teaches undergraduate and graduate courses, as well as doing research in his own field of Q M. His financial experience combined with his strong Q M background also give him the opportunity to act as a professional consultant for a Canadian bank.

His position provides him with independence, interesting research, and the opportunity to work with young, ambitious students. It is also financially rewarding. He has no intention of changing his position in the near future.

PART 4 CURRICULUM



THE BACHELOR OF COMMERCE DEGREE

Q M students, like all other Commerce undergraduates, must have a complete D.E.C. from CEGEP, including the Mathematics courses 201-101, 103, 105 and 203 to enter the B. Comm. degree programme.

All Commerce students at Concordia take a "core" programme of 17 courses (51 credits), covering the fundamentals of business operations. This means that all Concordia graduates have some knowledge of every field of activity — a big advantage in job hunting. In addition to the Core courses, you will choose a Major programme of 8 courses in one of the five Commerce Departments (Accountancy, Finance, Management, Marketing, or Quantitative Methods) according to your interests and abilities. Some students also take a "Minor" programme of 4 courses in a different Department, to broaden their expertise.

The Core courses are :

Accountancy 213 and 218 - Financial and Managerial Accountancy
Economics 209 and 210 - Micro and Macro Economics
Finance 314 and 315 - Introduction to Finance
Management 213 and 340 - Organizational Behaviour
Management 266 - Theory and Practice of Management
Management 460 and 475 - Business Policy and Law
Marketing 213 and 350 - The Marketing Process and its Management
Quantitative Methods 243 and 244 - Statistics
Quantitative Methods 313 and 314 - Operations Research and Production Planning

You should plan to complete all these courses as early as possible, to prepare for your advanced Major courses.

If you choose one of the Q M Majors, your course credits will be made up as follows :

Core courses	17 (51 credits)
Major courses	8 (24 credits)
Electives	5 (15 credits)
	30 (90 credits)

Instead of 5 unrelated electives, you may choose to take a 4-course Minor program in some other department, plus one free elective.

MAJOR IN QUANTITATIVE METHODS

This Major programme provides an introduction to all the main topics in Q M :

- How to make a study of a business system
- How to make the best decision when the outcomes are uncertain
- How to analyze large amounts of data and predict future trends
- How to allocate resources most profitably
- How to use computerized information

The following courses are required :

QUAN C 316 - Optimization Techniques
QUAN C 327 - Business Systems
QUAN C 345 - Business Decision Analysis
QUAN C 423 - Business Computer Programming
QUAN C 424 - Data Processing Systems

One model-study course from the following list :

QUAN C 412 - Network Optimizing Models
QUAN C 414 - O R Models in the Social Environment
QUAN C 416 - Inventory, Replacement, Maintenance

One system course from the following list :

QUAN C 425 - Business Systems Analysis and Design
QUAN C 426 - Business System Simulation & Control

One statistics course from the following list :

QUAN C 444 - Business Experimental Analysis
QUAN C 447 - Statistical Forecasting
QUAN C 448 - Business Sampling Techniques and Quality Control

MAJOR IN DATA PROCESSING

This programme is for computerized information *users*, not for professional programmers and analysts. It concentrates on the sources and uses of the information required to run a business, and in the management aspects of data processing.

The following courses are required :

QUAN C 221 - Introduction to Business Computing
QUAN C 327 - Business Systems
QUAN C 422 - Data Centre Management
QUAN C 423 - Business Computer Programming
QUAN C 425 - Business Systems Analysis and Design

One of the following courses :

QUAN C 424 - Data Processing Systems
ACCO C 414 - Accounting Information Systems

Two of the following advanced computer courses :

QUAN C 417 - Commercial Software
QUAN C 421 - R P G Programming
QUAN C 426 - Business System Simulation & Control

MINOR IN QUANTITATIVE METHODS

This is for students taking a Major programme in some other Commerce Department who would like a general acquaintance with the main topics in Q M. It is a sub-set of the courses in the Major Programme :

1 course from QUAN C 316, C 327 or C 345
1 course from QUAN C 412, C 414 or C 416
1 course from QUAN C 444, C 447 or C 448
1 course from QUAN C 425 or C 426

MINOR IN BUSINESS SYSTEMS

This is a sub-set of the courses in the Data Processing Major, for students taking a Major in some other Commerce Department. A student must have taken at least one introductory computer course (in CEGEP or university) before entering this programme.

QUAN C 327 - Business Systems
QUAN C 423 - Business Computer Programming
QUAN C 424 - Data Processing Systems

One of the following courses :

QUAN C 425 - Business Systems Analysis and Design
QUAN C 426 - Business System Simulation & Control

MINOR IN BUSINESS STATISTICS

Students who wish to concentrate on statistics without studying the other quantitative methods may take this Minor, which consists of :

QUAN C 345, C 444, C 447 and C 448

MINOR IN MANAGERIAL OPERATIONS RESEARCH

Similarly, students who want a good grasp of the O R field alone can take the following courses for a Minor:

QUAN C 316, C 412, C 414 and C 416

MINOR IN PRODUCTION SYSTEMS

There is a growing need for B. Comm. graduates with a knowledge of production and production planning, which involves both Q M and Management. The following Minor programme provides a package of the most relevant courses :

QUAN C 365 - Production Systems
MANA C 345 - Production Management
QUAN C 416 - Inventory, Maintenance, Replacement

One of the following courses :

QUAN C 412 - Network Optimization Models
QUAN C 448 - Business Sampling and Quality Control

COURSES

Officially, you may take any Commerce course at any time provided that you have completed the prerequisite courses and conditions as described in the Calendar. In practice, it is advisable to take the introductory Economics, Computers and Statistics courses as early in your programme as possible, so that you will have freedom to schedule the many advanced courses which depend on these as prerequisites.

If you have obtained good grades for a CEGEP course in any of the Core subjects, you may be eligible for an "exemption". This means that the course will be recognized as the prerequisite for advanced courses ; it also means that you will not have to take the elementary course over again, but may take a more advanced course instead. (It does not reduce the total number of courses you must take for the degree.) Exemptions are awarded by the Admissions Office at the time you apply to Concordia.

CORE Q M COURSES

STATISTICS

The purpose of these courses is to show how a business man should look at his information — how good it is, what he can deduce from it, how much he can rely on it, and how he should go about getting the best information with the least cost and effort.

If you have taken the prerequisite CEGEP mathematics you will have no difficulty with these courses. We do not study the higher mathematics used by professional statisticians; our purpose is to explain the standard methods which are used every day in all areas of business and industry.

QUAN C 243 starts at the very beginning, with the way facts and figures are collected and summarized, and how much information can be extracted from a few measurements. It also shows you how to deal with the uncertainties of the future, by working out chances and probabilities.

QUAN C 244 is concerned with the conclusions you can draw from meagre evidence — we hope to make you very skeptical about claims and predictions. We introduce the computer as a tool in statistics, and explain what "seasonally adjusted" means, and how the Consumer Price Index is obtained.

OPERATIONS RESEARCH

A number of powerful new problem-solving techniques have been developed in the last 30 years for choosing the best ways to distribute money or other resources among a number of competing uses. The O R courses describe some of the common types of problem situation where these new methods can be used. They require a knowledge of linear algebra, but no higher mathematics.

QUAN C 313 deals mainly with Linear Programming, which is certainly the most important development in applied mathematics in the last century. It also includes the study of special transportation and allocation problems and the Critical Path method of scheduling.

QUAN C 314 covers a variety of other topics, many of which are particularly useful in planning production operations. In particular, we show you how to balance the pros and cons of a decision, so that the odds are the most in your favour.

OPERATIONS RESEARCH COURSES

QUAN C 316 (Optimization Techniques) is an extension of the Core course QUAN C 313, including methods of finding the best set of choices from a number of alternatives, and how a professional Operations Research analyst goes about the study of a problem.

QUAN C 327 (Business Systems) is a theoretical course on systems in general - accounting systems, production and distribution systems, information systems, etc. You will learn how to study their behaviour, make models of them, and estimate how they would behave in different circumstances. You should complete both Core courses in Statistics before taking this course.

QUAN C 345 (Business Decision Analysis) shows you how to make the best decisions in situations where the results of your choice are uncertain, and you want to stack the odds in your favour. These methods apply in all fields of management where planning decisions have to be made. You must have completed QUAN C 243 and 244 before enrolling in this course.

QUAN C 365 (Production Systems) is an extension of the Core courses QUAN C 243, 244 and 313, applying O R methods to the planning and scheduling of production operations, and introducing the study of plant layout, materials handling and quality control of the product.

QUAN C 412 (Network Optimization Models) follows the Core courses in O R (QUAN C 313 and 314). It concentrates on the methods used in finding the best operating plans and schedules for complicated situations involving many different steps or stages, or many different suppliers, customers and products.

QUAN C 414 (O R Models in the Social Environment) studies the application of the methods in the Core courses QUAN C 313 and 314 to situations which arise outside of the individual business firm - for example, in the educational system, the criminal justice system, rural and agricultural operations, and public policy on transportation, energy, pollution, etc.

QUAN C 416 (Inventory, Replacement and Maintenance Models) is another Production-oriented course, dealing with the 'housekeeping' problems of running a manufacturing plant smoothly. This course follows the Core courses QUAN C 313 and 314, and is required in the Production and O R Minor programmes.

QUAN C 426 (Business System Simulation and Control) shows you how to use a computer to study the operation of a business system, and predict how it will behave in different circumstances. Students must have taken all the Q M Core courses, and also a computer programming course such as CEGEP Fortran, COMP C 211, QUAN C 423, etc.

QUAN C 448 (Business Sampling Techniques and Quality Control) consists of two parts : the proper ways to take measurements of systems in operation (audits, inventories, market research, production line sampling, etc.); and a study of the special techniques used in the inspection and quality control of a product. The Core courses QUAN C 243 and 244 are required.

INFORMATION SYSTEM COURSES

QUAN C 221 and QUAN C 223 are introductory courses in computers and computerized information systems, intended for Commerce students who need to know how to make use of business computer facilities without becoming professional programmers. They describe the capabilities of the different types of computer systems and the input, output, storage and communications equipment connected with them. You will learn how modern business has been affected by computers, and how a firm can use them effectively.

QUAN C 327 (Business Systems) is a theoretical course on systems in general - accounting systems, production and distribution systems, information systems, etc. You will learn how to study their behaviour, make models of them, and estimate how they would behave in different circumstances. You should complete both Core courses in Statistics before taking this course.

QUAN C 417 (Commercial Software) surveys the many types of computer program packages that are available ready-made, and offered for sale or rental. This is an elective course for students who have taken QUAN C 423 or equivalent.

QUAN C 421 (R P G Programming) is an elective course in a computer programming language very widespread among small businesses. Before taking this course you should have completed a Cobol course such as COMP C 251 or QUAN C 423.

QUAN C 422 (Data Processing Management) deals with the relations between the Data Centre and the users of the computerized information. It also studies the organization and operation of a data centre from the management point of view. Students must have completed QUAN C 423 or equivalent.

QUAN C 423 (Business Computer Programming) is not intended to produce expert programmers; its purpose is to show the *users* of information what types of data processing are easy and what types are difficult, by actually trying it out themselves. We hope that after taking this course you will be more sympathetic and knowledgeable toward the programmers you will have to deal with later. A previous computer course is required.

QUAN C 424 (Data Processing Systems) is the application of the general theory to information systems of all kinds — accounting, production, personnel and management. We discuss what it is that makes a good system; how to keep errors and delays under control; and how to avoid accidents and computer crimes. QUAN C 221 or equivalent is required.

QUAN C 425 (Business System Analysis and Design) is a continuation of QUAN C 424, concentrating on the design and implementation of new or revised information systems. The students will be divided into small teams to investigate an actual business system in operation and write a critical report.

QUAN C 426 (Business System Simulation and Control) shows you how to use a computer to study the operation of a business system, and predict how it will behave in different circumstances. Students must have taken all the Q M Core courses, and also a computer programming course such as CEGEP Fortran, COMP C 211, QUAN C 423, etc.

STATISTICS COURSES

If you have completed the Core statistics courses QUAN C 243 and 244, you may take any of the following advanced courses which study the practical application of statistics to business uses.

QUAN C 444 (Business Experimental Analysis) deals with the design and analysis of the experiments which have to be made in order to get information for future planning in any field of business.

QUAN C 447 (Statistical Forecasting) covers various methods used for analyzing the past performance of some quantity in order to predict what it will do in the future.

QUAN C 448 (Business Sampling Techniques and Quality Control) consists of two parts : the proper ways to take measurements of systems in operation (audits, inventories, market research, production line sampling, etc.); and a study of the special techniques used in the inspection and quality control of a product.

THE PEOPLE

The Dean of the Feculty of Commerce and Administration is Dr. Pierre Simon. There are two Assistant Deans who (among other things) look after student affairs : Prof. R. Wills and Prof. R. Curnew.

The Chairman of the Quantitative Methods Department is Dr. Dale Doreen. His office is on the fifth floor of the Norris Building. The Q M Department secretary is in Room N-560 of the same building.

When you apply to Concordia as a new student, you will be assigned a Faculty Advisor - a full-time professor who will be available to help you choose your program of courses. The full-time professors in the Q M Department are :

M. Anvari	Ph D	Assistant Professor
C. Bayne	Ph D	Associate Professor
A. Claus	Ph D	Associate Professor
D. Doreen	Ph D	Associate Professor
H. Eiselt	Ph D	Assistant Professor
M. Kusy	Ph D	Assistant Professor
G. Pederzoli	Ph D	Professor
Z. Popp	M B A	Associate Professor
A. Riding	M B A	Assistant Professor
C. Sandblom	Ph D	Associate Professor
S. Srinivasan	Ph D	Associate Professor
D. West	Ph D	Associate Professor
E. West	Ph D	Associate Professor
R. Wills	M B A	Associate Professor

THE QUANTITATIVE METHODS SOCIETY

The Q M Society is a students' organization open to all undergraduate students. Our purpose is to offer you the opportunity to complement your education by meeting people from government and business to discuss common problems, future trends, etc. and attending meetings of professional Q M associations such as the Canadian Operations Research Society and the Canadian Information Processing Society. We sponsor seminars with professors, and student-professor meetings. We represent all Q M students in the regular monthly meetings of the Q M Department, and explain the benefits of Q M to the uninformed (or misinformed) students who have not yet chosen a Major programme. We also arrange for tutorials in the Core courses to help you with your studies.

Our office is located in the basement of the Norris Building, Room N-025. Why don't you drop in and say hello, or phone us at 879-4573? We look forward to seeing you.